

# NOAA's NWS Caribbean Tsunami Warning Program

## Moving towards the establishment of a Caribbean Tsunami Warning Center

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LA CIFRA DE MUERTOS AUMENTA. SOLO EN LA ZONA DEL MAULE HAY 586 MUERTOS

# El maremoto en Chile dejó más víctimas que el propio terremoto

En algunos puertos del sur chileno solo se sintió un remezón, pero el maremoto los sorprendió con el pijama puesto y no lograron escapar.

► **Rodrigo Bustamante, Maule. BBC.** Cinco días después del terremoto de 8,8 grados Richter que afectó a la zona centro-sur de Chile, el número oficial de muertos es de 795, pero el panorama es de pesimismo cuando se observa la destrucción que el tsunami dejó en la zona costera, donde se teme que haya muchas más víctimas.

Cada vez hay más voces que indican que el número de muertes causadas por el maremoto posterior al sismo es mayor que el provocado por el propio terremoto.

Localidades como Iloca, Dichato, Constitución o Pelluhue en la región del Maule sufrieron los efectos del maremoto y quedaron devastadas. La ola gigante entró de madrugada y destruyó todo lo que encontró a su paso, incluyendo a muchos que no alcanzaron a huir hasta los sectores altos.

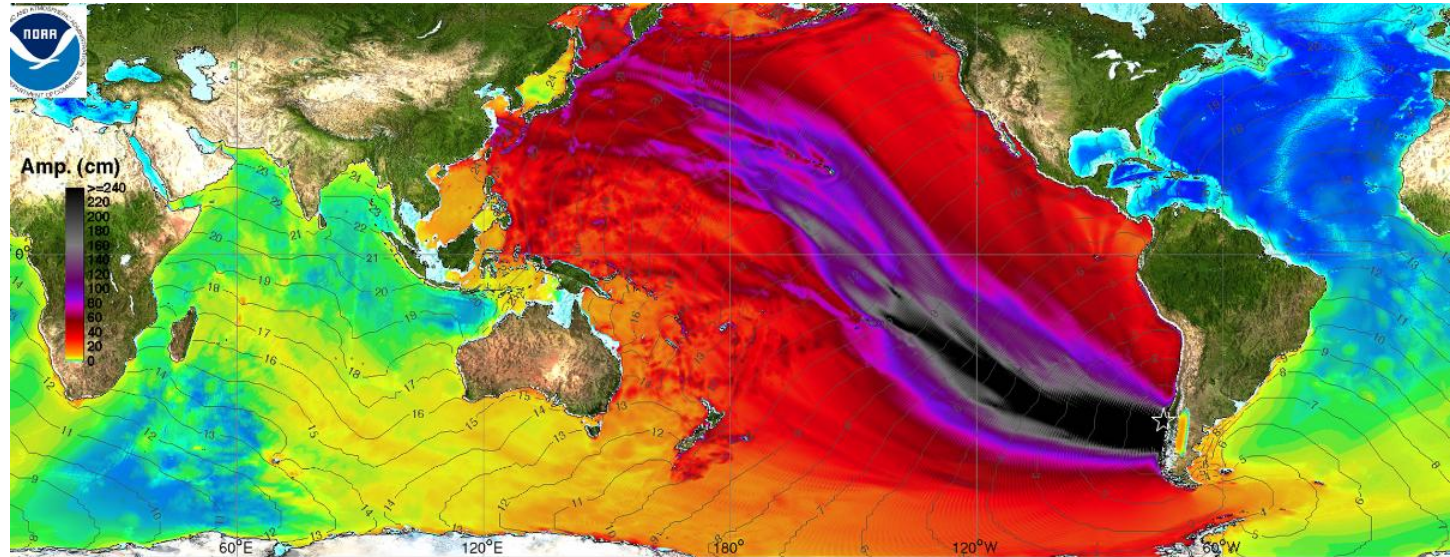
La región del Maule registra al



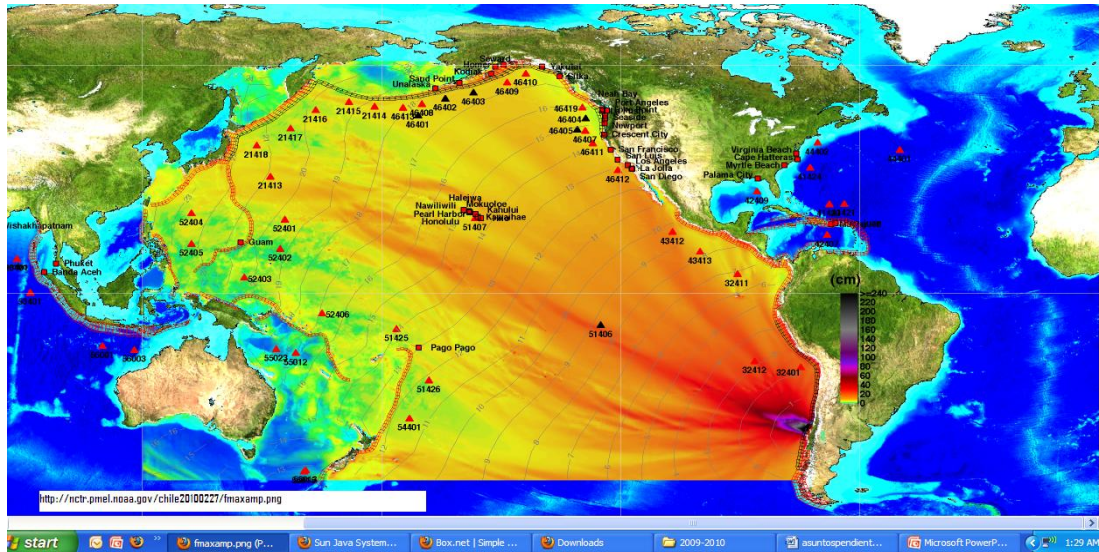
**NAUFRAGIO.** Una vecina de Maule busca sus pertenencias entre los escombros de lo que fue su hogar. Las olas arrastraron a la nave hasta el techo de su casa.



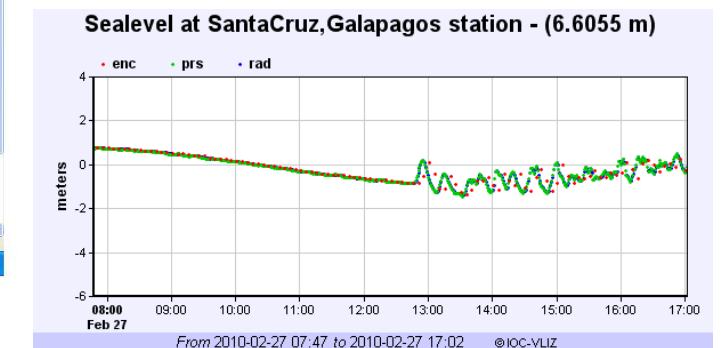
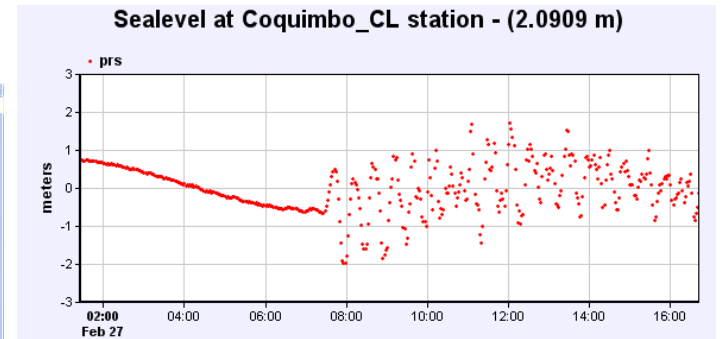
# Chile and its Tsunamis



1960 Chile tsunami (earthquake magnitude Mw 9.5) Maximum amplitude plot -- for comparison with Feb 27, 2010 Chile tsunami event



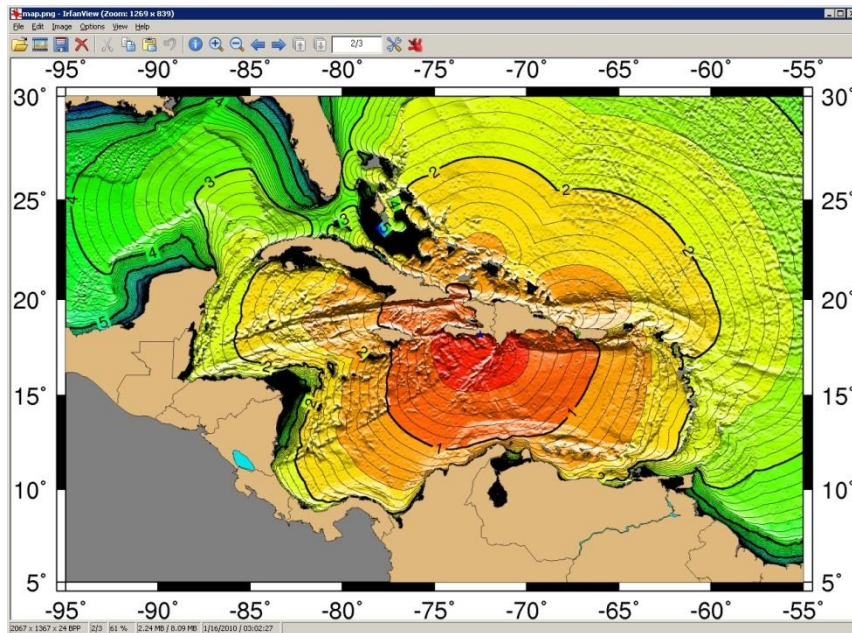
February 27, 2010 NOAA Tsunami Forecast Model





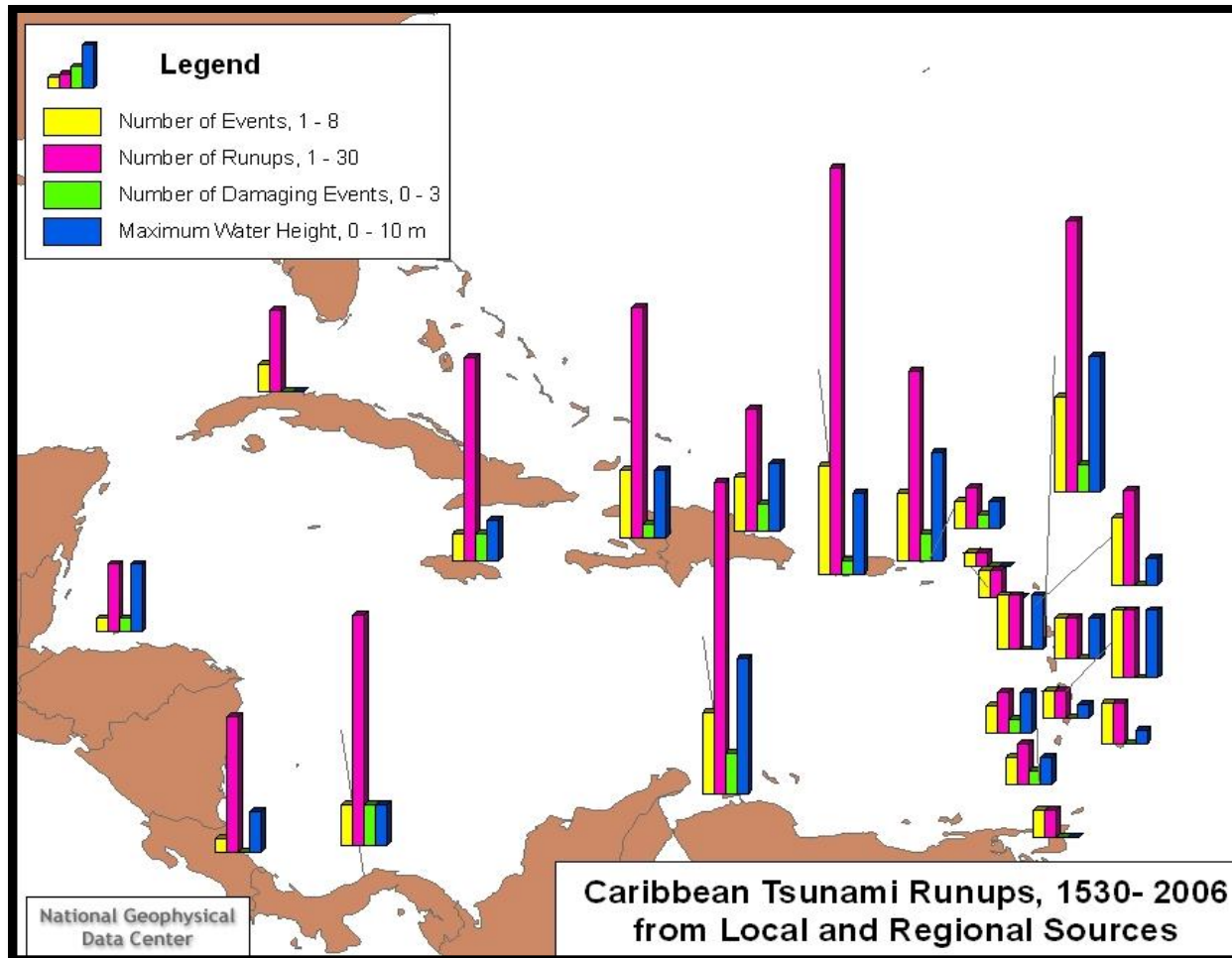
# Haiti Earthquake and Tsunami

Jan. 12, 2010, Mw 7.0, > 200,000 dead (EQ)



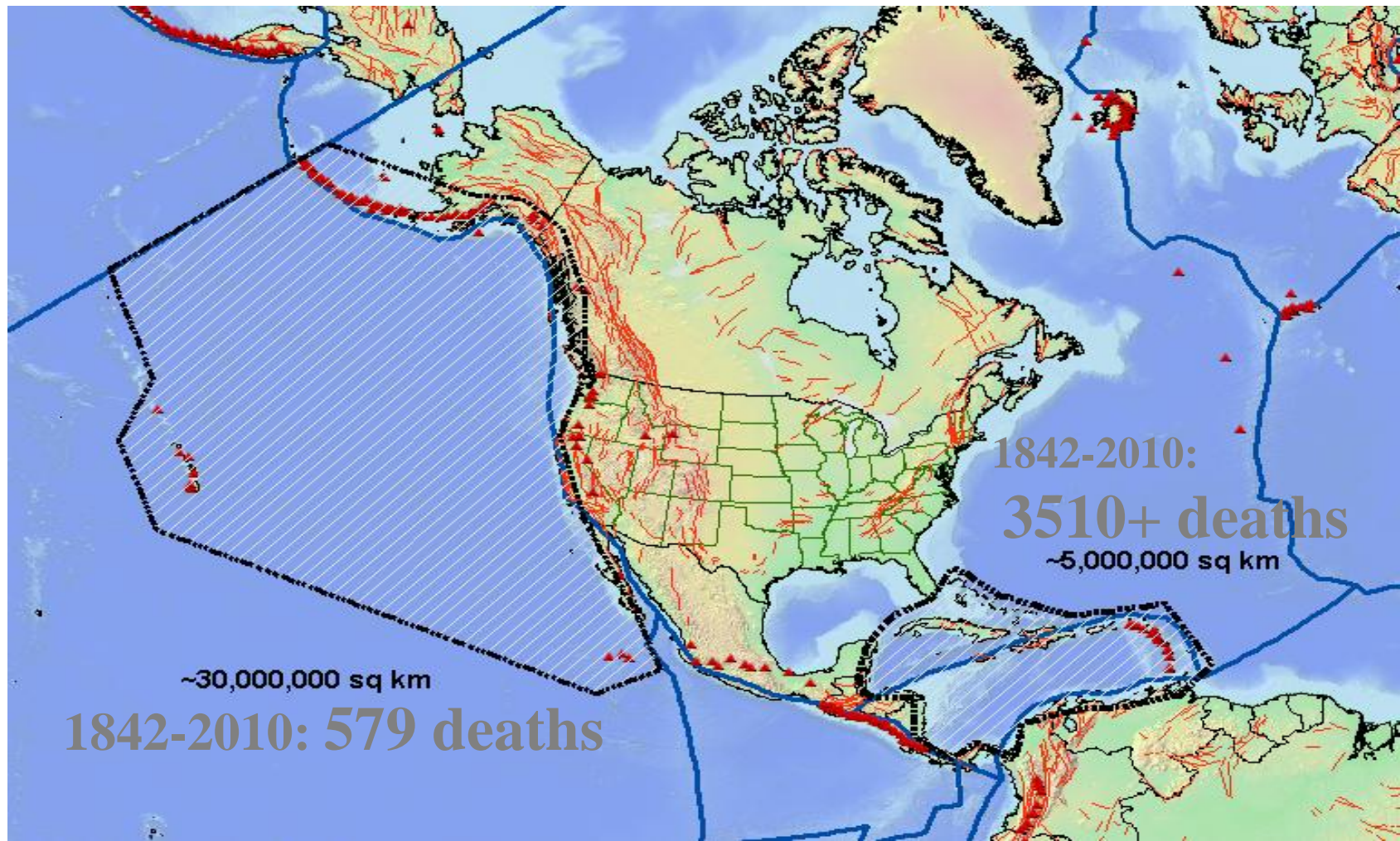
The tsunami took the lives of at least seven villagers in the town of Petit Paradis, on Haiti's western coast.

# Tsunamis in the Caribbean



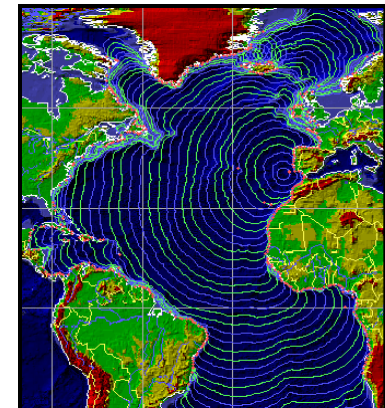
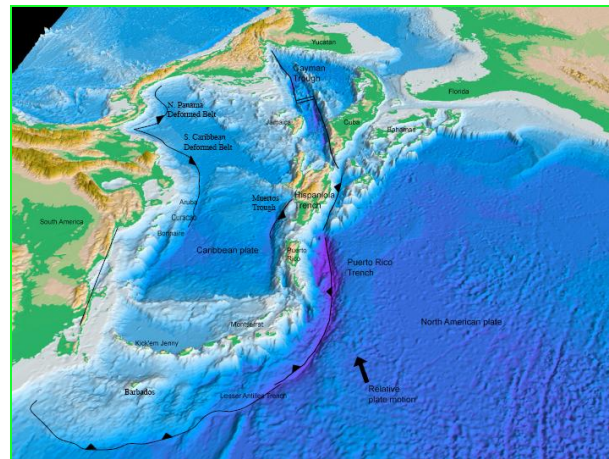
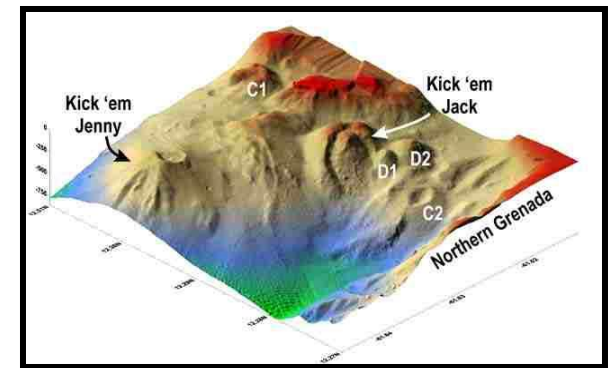
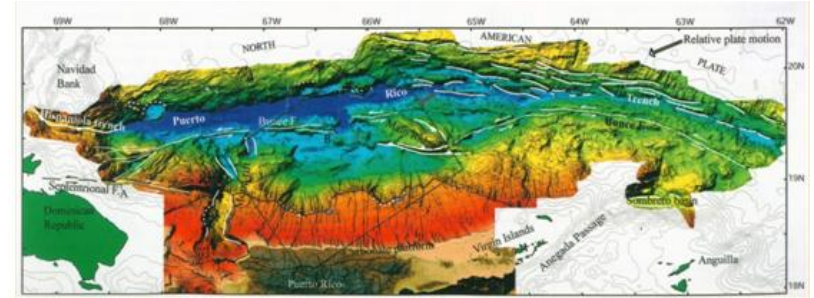
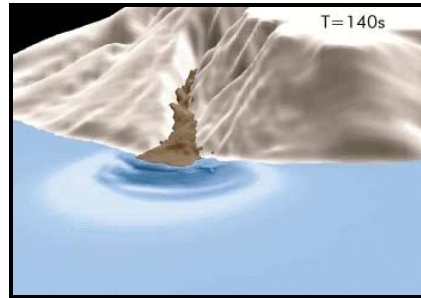


Tsunami deaths since 1842 in two key areas, the northeastern Pacific (Alaska, Hawaii, West Coast States) & the Caribbean Basin (includes Puerto Rico & US Virgin Islands). **The Caribbean basin with only 1/5 the area has 6x more deaths !**



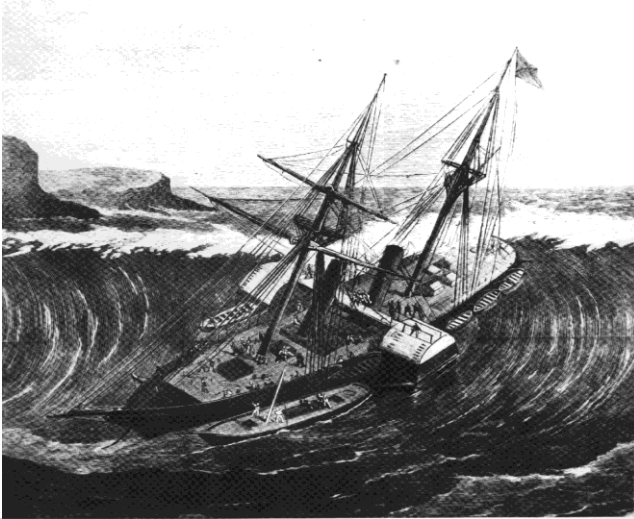
# Caribbean Tsunamigenic Sources, *Mostly short-fused*

- Local and Regional Earthquakes
- Subaerial and Submarine Landslides
- Subaerial Volcanoes- Soufriere Hills, Montserrat
- Submarine Volcanoes-Kick 'em Jenny
- Tele-tsunami (e.g. "Lisbon" Nov. 1, 1755)





The risk from tsunamis has increased dramatically due to population growth, coastal infrastructure development and tourism



US Virgin Islands, 1867

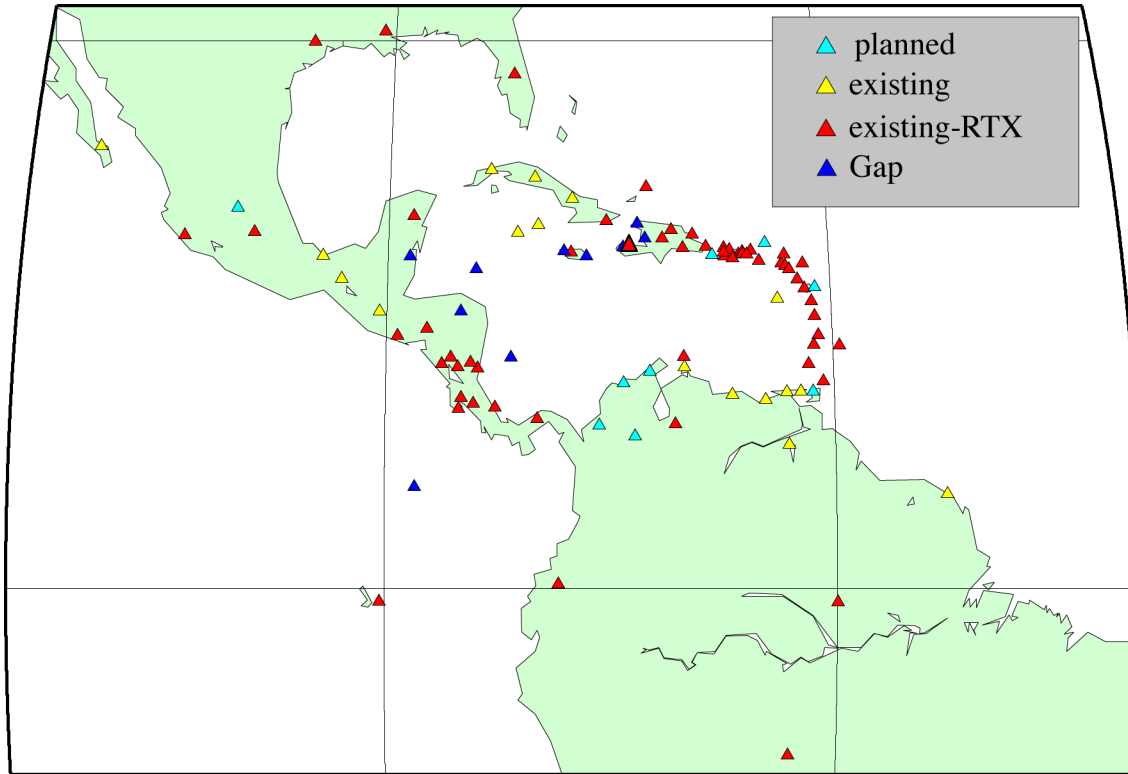
US Virgin Islands, today



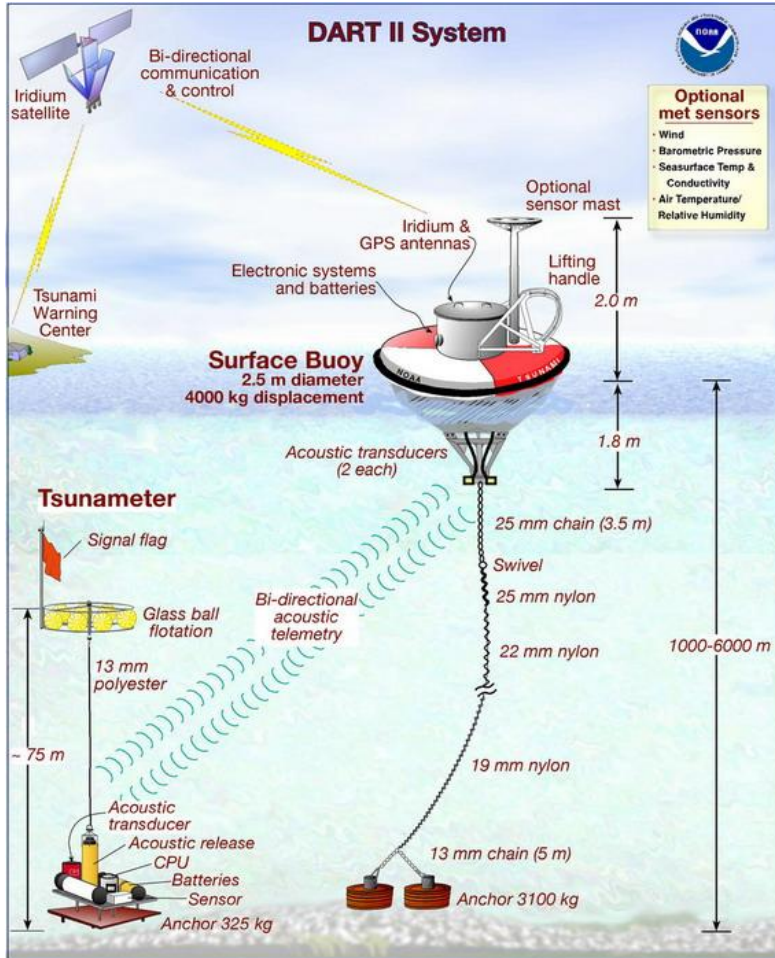
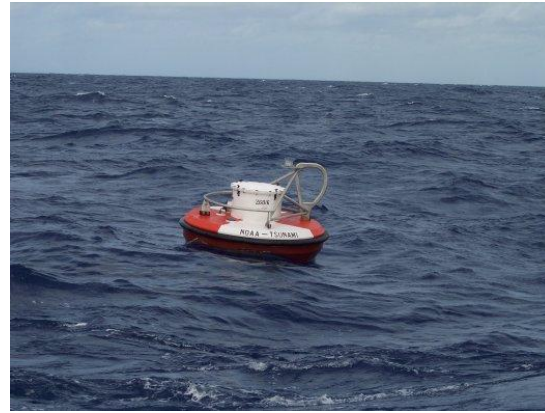
During high season, there can be as many as 25,000 people arriving on cruise ships during a day. During low season, as much as 15,000 people/day.



# Caribbean Stations Monitored for Caribe EWS



# Sea Level Gauges





# Core Stations Caribbean Sea Level Network

<http://maps.google.com/>



# Tsunami Warning Centers



Red Sismica de PR



Centro de Alerta de Tsunamis de Alaska  
Y la Costa Oeste de los EEUU



Centro de Terremotos y Tsunamis del  
Caribe (Por financiar)



Centro de Alerta de Tsunamis del Pacifico



# MISSION - CTWC

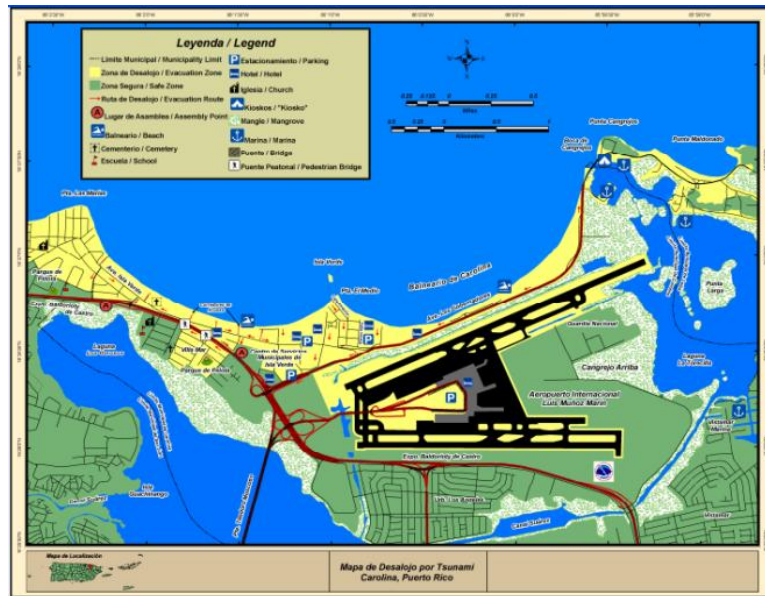
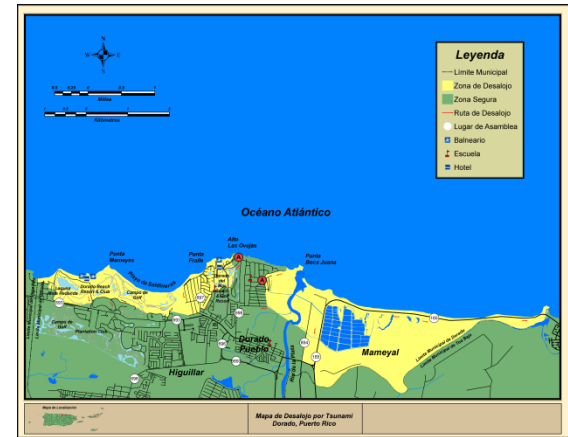
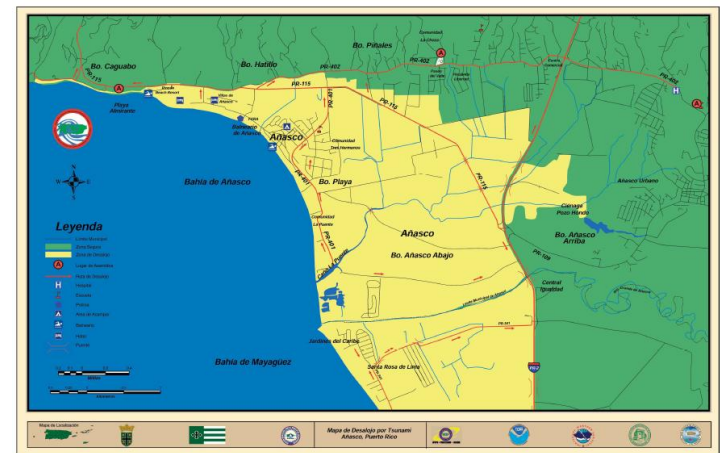
- The proposed Caribbean Tsunami Warning Center should provide timely and effective detection and analysis of seismic events and tsunamis and dissemination of tsunami watch, warnings and advisory products to the Caribbean countries, states, territories and Adjacent Regions.

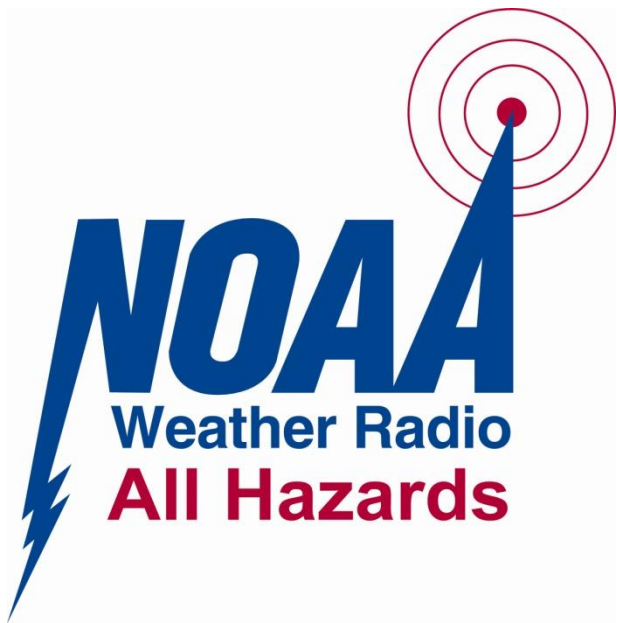
# Current Task NOAA CTWP

- Facilitate the integration of more seismic and sea level stations into the warning centers.
- Improve tsunami forecasting capabilities
- Support education and preparedness efforts throughout the Caribbean.

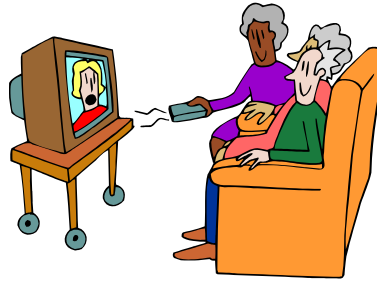


# Tsunami Evacuation Maps





# Dissemination of Tsunami Alerts







- Danger!
- Run for High Ground!
- Follow Emergency Instructions.

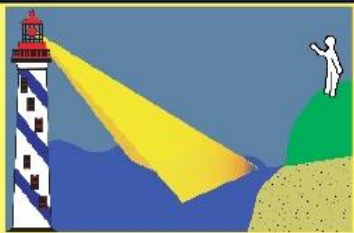
**W A R N I N G**

**A D V I S O R Y**

- Possible Strong and Dangerous local Currents.
- Stay tuned for local Emergency guidance.



- Potential Danger.
- Stayed tuned for more information.



**W A T C H**



- Relax.
- No Danger.
- A distant ocean basin may be in danger.

**I N F O R M A T I O N  
S T A T E M E N T**

WEST COAST & ALASKA TSUNAMI WARNING CENTER



## Red Sísmica de Puerto Rico

<http://redsismica.uarm.edu> Teléfono: 787-833-8433

Centro de Alerta de Tsunami de la Costa Oeste & Alaska

<http://wcatwcrh.noaa.gov>



### 4 Niveles de Mensajería de Tsunami



- ¡Peligro!
- ¡Corra a tierras altas!
- Siga las instrucciones de emergencia.

**Aviso**

**Advertencia**

- Posibles corrientes locales fuertes y peligrosas.
- Manténgase escuchando las instrucciones locales de emergencia.



- Peligro potencial.
- Permanezca alerta para mas información.



**Vigilancia**



- Permanezca tranquilo.
- No hay peligro.
- Una cuenca oceánica distante puede estar en riesgo.

**Declaración de  
Información**

WEST COAST & ALASKA TSUNAMI WARNING CENTER





# Our Mission: Avoid this...



More information: [christa.vonh@noaa.gov](mailto:christa.vonh@noaa.gov)

Thank you very much